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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/442,353	11/17/99	KIKKAWA	H NEM-01701

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EXAMINER

NGUYEN, H

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 06/21/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/442,353

Applicant(s)

KIKKAWA ET AL.

Examiner

Julie-Huyen L. Ngo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1,2,4-6,8,9 and 12-15 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 6-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1,2,4-6,8,9 and 12-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 1999 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election **without** traverse of Species B, figure 2 corresponding to claims 1, 2, 4-6, 8-10 and 12-15 in Paper No.10 is acknowledged.

Applicant is advised that claim 10 recites a diffusion preventive layer, which is not disclosed in the elected species of figure 2. Therefore, claims 3, 7, 10, 11 and 16-24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention and species, there being no allowable generic or linking claim. ✓

Information Disclosure Statement

The listing of reference(s) in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

The Japanese Patent Application Laid-Open No. 146087/1977 listed on page 18 has not been considered since it was not submitted in a separate paper such as form PTO-IDS 1449.

The information disclosure statement filed on November 17, 1999 (paper No. 2) has been considered.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature recites in claim 15 regarding the rough portions must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. ✓

Claim Objections

Claim 1 is objected to because it appears that the term "a liquid crystal" recites in line 5 should be __ a liquid crystal layer __. ✓

Claim 2 is objected to because it appears that the reflective layer is **formed** NOT constituted on the same plane as that of the gate electrode.

Claim 5 is objected to because it appears from figure 2 that the light shielding layer is disposed on an area of only ONE switching element.

Claim 12 is objected to because it appears from the description of figure 2 that there is more than one **rough** portion formed under the reflective film. ✓

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1, 2, 12 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. ✓

In claim 1 line 7, the limitation "the material" lacks antecedent. It appears from the specification (p. 9) that the reflective film constituted of a same material of one of the materials constituting the switching element. It is unclear which switching element

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Applicant intends to recite in lines 8 and 12 of claim 1 since there are more than one switching elements recited earlier. Furthermore, the recitation regarding the reflective layer simultaneously formed during formation of the switching element, in lines 7-10, is inconsistent with the specification and drawing (p. 9 and fig.2). It appears that the gate electrode (22) of the switching element is the ONLY element simultaneously formed with the reflective layer (23).

In line 3 of claims 12 and 15, the limitation "the lower layer" lacks antecedent.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-6, 8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagata et al. (US 6,118,505) in view of Ukita et al. (US 5,940,154).

Nagata et al. disclose a Liquid Crystal Device comprising all the limitations recited in claims 1, 2, 4, and 8 except for the reflective layer formed constituted of a same material of the gate electrode and simultaneously formed during the formation of the gate electrode.

Ukita et al teach (col. 10, line 55 - col. 11, line 21 and figure 5) forming a aluminum or aluminum alloy reflective layer over rough portions of a substrate and only under the pixel electrode (6) for reflecting light through a pixel region. Doing so would significantly reduce a light from entering the Thin Film Transistor (20)'s semiconductor

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layer (7), which would not decrease in an off-resistance. Accordingly the leakage current would decrease and no deterioration in display grade would occur.

Since the gate electrode in the Nagata et al. device and the reflective layer, as taught by Ukita et al, are formed of metal material and on a substrate, it would have been obvious for one of ordinary skilled in the art to simultaneously form them of the same material to reduce manufacturing time and step.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagata et al. in view of Ukita et al. as applied to claims 1 and 8 above, and further in view of ~~Park~~ *Seiki et al.* (US 5,811,835).

With respect to claim 9, it is well known in the art for gate electrodes to composed of a low-resistance metal, such as aluminum (Al), coated with chromium (Cr), tungsten (W), titanium (Ti), tantalum (Ta), or some other metal whose melting point is higher than that of aluminum such as neodymium or with an aluminum alloy so that a hillock, blister, etc. of aluminum can be effectively prevented, as evidenced by ~~Park~~ *Seiki et al.* (col. 1, lines 25-32 and col. 3, lines 30-40).

Therefore, it would have been obvious to one of ordinary skill in the art to form the reflective layer and the gate electrode in the device of Nagata et al. in view of Ukita et al, of aluminum and neodymium for the reasons set forth above.

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagata et al. in view of Ukita et al. as applied to claim 1 above, and further in view of Kimura (US 5,610,741).

Kimura teaches (figures 13&14 and col. 15, line 61-col. 16, line 36) forming a reflective layer covering rough portions by having a photo resist film or insulation film

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(col. 16, lines 63-67) formed directly on a substrate and patterned to form the rough portions^{12A} for effectively reflect light.

Therefore, it would have been obvious to one of ordinary skill in the art to form the reflective layer in the device of Nagata et al. in view of Ukita et al., as taught by Kimura for the reason set for the above.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagata et al. in view of Ukita et al. as applied to claims 1 and 12 above, and further in view of Itoh et al (US 5,841,496).

It is well known in the art to form a reflective layer from cutting a surface of a substrate to form rough portions as evidenced by Itoh et al figure 15.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Doriguzzi et al (US 4,106,859) disclose a reflector with light scattering surface for LCD and method for their manufacture.

Shimada et al. (US 6,097,459) disclose a method for producing a reflective type LCD.

Park (US 6,118,508) disclose a LCD including reference electrode lines that extend across multiple pixels.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie-Huyen L. Ngo, whose telephone number is (703) 305-3508. The Examiner can normally be reached on T-F.

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If attempts to reach the examiner by telephone are unsuccessful, the Examiner's Supervisor, William L. Sikes can be reached on (703) 308-4842.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7721 for regular communications and (703) 308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is (703) 308-0956.

JHM

June 18, 2001



William L. Sikes

Supervisor Patent Examiner

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